Agenda

- Introduction and Overview
  - General Requirements
  - What's New
- Reporting Requirements
- Verification Requirements
- Electric Power Sector Requirements
- Technical Discussion on Power Attribution Methods

2

Goals of Reporting Program

- Consistency with other programs and involvement with Western states efforts
- Rigorous and well defined emissions estimation methods
- Report all gases where methods available
- Include verification and ensure sufficient number of qualified verifiers
- Create bottom-up inventory to track trends and support emission reduction strategies

3

Key Proposals

- Facility-based reporting
  - Cement Plants, Power Plants, Cogeneration, Refineries, Hydrogen Plants, Large Combustion
- Broader requirements for Electric Power Sector
  - Retail Providers, Marketers
- Third Party Verification
  - Annual or triennial as specified

4

Key Proposals

- Report specified stationary combustion, process, fugitive emissions
- Report fuel use, indirect energy use
- Electricity transactions in power sector
- Six Kyoto gases as required
- Fuel testing, default factors, emissions monitoring specified by sector and process

5

Key Issues Across Sectors

- Phase-in
- Sufficient third party verifiers
- Entity reporting
- De minimis emissions
- Mobile sources
- Default emission factors

6

Key Issue: Phase-in

- Reporting still begins in 2009
- Verification begins in 2010
- First reports can use best available emissions information
- 2010 and future reports must use methods specified in regulation

7

Key Issue: Sufficient Verifiers

- Welcome air districts and private consultants to act as verifiers
- Provides larger pool of qualified verifiers
- Provides choice to operators
- Third-party verifiers are consistent with existing GHG programs

8

Key Issue: Entity Reporting

- Reporting by facility operators
- Includes contact information for other facilities under common ownership
  - May be separate submittal by entity
- Whole-entity footprint report will be an option in reporting tool

9

Key Issue: De Minimis

- Proposal allows designation of small discrete sources as de minimis
- Up to 3 percent of facility CO2e emissions, not to exceed 10,000 MT
- Emissions are still reported but may be estimated through simpler methods

10

Key Issue: Mobile Sources

- Reporting is optional at facility level
- CCAR method provided for any facility opting to include mobile sources
- Expected for optional entity reporting
- Will look at mobile source reporting needs in context of scoping plan

11

Key Issue: Default Factors

- Appendix A provides default factors where use is specified
- Option to develop source-specific emission factors
- Any source for CH_4 and N_20
- Biomass, solid waste, geothermal for CO_2

12

Participation Information

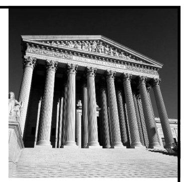
- Workshop materials: http://www.arb.ca.gov/cc/ccei/ccei.htm
- Staff Report (includes proposed Regulation): http://www.arb.ca.gov/regact/2007/GHG2007/GHG2007.htm
- Webcast information: http://www.calepa.ca.gov/broadcast/
- Email comments during webcast: auditorium@calepa.ca.gov

13

Regulatory Proposal and General Requirements

14

Reporting Statutory Requirements



- Regulation for reporting and verification by January 1, 2008
- Begin with sources contributing the most to statewide emissions
- Account for all electricity consumed, including imports
- Use CCAR protocols as appropriate

15

How We Got Here

- Continuing stakeholder involvement in ARB process
- 4 previous workshops
- 15 technical discussions
- Numerous meetings and teleconferences
- Coordination with State agencies
- Coordination with California Climate Action Registry

16

Since August 15 Workshop

- Received over 80 comment letters and emails on the August 10 preliminary draft regulation
- Worked to address many stakeholder concerns, incorporate changes
- Addressed additional issues from public process in staff report

17

The Regulatory Process

- Staff proposal released for formal 45 day comment period on October 19
- Collect comments on proposed regulation
- Board Hearing December 6 to receive public testimony and consider staff proposal
- Board deliberates and accepts, modifies, or rejects proposal

18

Submitting Comments

- We are in formal 45 day comment period (October 19 – December 5)
- **Strongly recommend** electronic submittal
  - Via http://www.arb.ca.gov/regact/2007/ghg2007/ghg2007.htm
  - Includes mechanism for providing attachments
- See hearing notice for additional options:
  - http://www.arb.ca.gov/regact/2007/ghg2007/ghgnotice.pdf

19

GHG Reporting Process

- Reporting
  - Operator submits required data to ARB each year by reporting deadline
- Verification
  - Verification team conducts verification when required and submits:
    - Detailed verification report to operator
    - Verification opinion to operator and ARB by verification deadline

20

Regulation Organization

- Applicability – Who has to report
- Subarticle 1 – General Requirements
  - Definitions
  - General reporting requirements
  - Reporting and verification schedule
  - Record keeping, confidentiality, enforcement
- Subarticle 2 – Sector Specific Requirements
  - Cement, electric generating, retail providers, cogeneration, refineries, hydrogen plants, large stationary combustion sources

21

Regulation Organization (continued)

- Subarticle 3 – Calculation Methods for Multiple Sectors
  - CO_2 emissions from combustion using emission factors, heat content, carbon content, CEMS, etc.
  - CH_4 and N_2O emissions
  - Indirect energy use
- Subarticle 4 – Verification Requirements
- Appendix – Compendium of Emission Factors for reporting

22

Reporting: General Requirements (§95103(a))

- Annual reporting for each facility or entity subject to regulation
- The operator -- party with "operational control" – has reporting responsibility
- Report emissions for specified facility sources and gases by fuel type
  - Additional data as specified

23

Applicability (§95101):

- Cement plants
- Oil refineries
- Hydrogen plants ≥ 25,000 MT CO_2/yr
- Electric generating facilities and electric retail providers
- Cogeneration facilities
- Stationary combustion sources emitting ≥ 25,000 MT CO_2/yr

94% of point source CO2 emissions

Changes to August 10 Draft – Applicability (§95101) –

- Electric power marketers would also report
- Electric generating facilities or cogeneration facilities report if ≥ 1 MW and emit ≥ 2,500 tons CO_2
- Reporting not required for backup or emergency generators
  - As designated in Air District permit
- Reporting not required for "portable equipment" (as defined in CA Code of Regulations)

25

Changes to August 10 Draft – Schedule –

- Provide first year phase-in period
  - Submit estimates of 2008 emissions in 2009
  - Facilities may use "best available data" for 2008 estimates
  - No verification requirement for 2009 submittal
  - 2010 and future reports must use methods specified in regulation
- Schedule changes
  - Reporting required earlier in year (April or June)
  - More time provided for verification (6 mos.)

26

Reporting and Verification Schedules (§95103(b)-(c))

- General stationary combustion, electric generating and cogeneration facilities not operated by other reporters
  - Emissions reports due by April 1
  - Verification complete by October 1
- Retail providers; other facilities
  - Emissions reports due by June 1
  - Verification complete by December 1

27

Changes to August 10 Draft – Additions –

- Fuel analysis data capture, measurement requirements (§95103(a)(8)-(9))
- Choose fuel-based or CEMS method and stay with it (§95103(a)(10))
  - New CEMS for reporting to be operational by Jan 2010
- Options to develop source-specific emission factors under supervision of air districts or ARB (§95125(b), (h); §95111(i))
  - CH_4 and N_2O for all facilities; CO_2 for biomass, municipal solid waste, geothermal

28

Appendix A: Emission Factors and Methods to Support Reporting

- What is included?
  - Unit conversions
  - Global warming potentials
  - Method for approximating emissions based on amount of fuel used
  - Emission Factors
  - EPA method for determining emissions of high global warming potential compounds

29

Primary Sources

- US Environmental Protection Agency & Energy Information Administration
  - Default CO_2 Emission Factors
  - Default Carbon Contents
  - Default Heat Contents
- Intergovernmental Panel on Climate Change
  - Global Warming Potentials
  - Default CO_2 Emission Factors
  - Default N_2O & CH_4 Emission Factors by Fuel Type

30

Overview of CO_2 Emission Calculation Methods

- 95125(a)
  - Emissions = Fuel Mass or Volume x Default Heat Content x Default Emission Factor
- 95125(c)
  - Emissions = Fuel Mass or Volume x Measured Heat Content x Default Emission Factor
- 95125(d)
  - Emissions = Fuel Mass or Volume x Measured Carbon Content
- 95125(e)
  - Employs Measured Heat and Measured Carbon Content

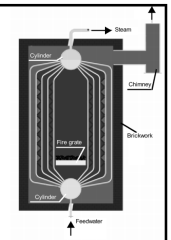
31

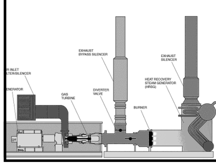
Comments on general reporting requirements?

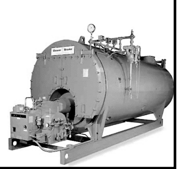
32

General Stationary Combustion Facilities (GSCs)

(§95115)







GSC Facilities Overview

- 25,000 metric tonnes CO_2 (stationary combustion)
  - Facility threshold
  - Does not include process, mobile, indirect electricity or fugitive emissions
- Reporting from many different sectors
- Requirements separate from refineries, power, cogeneration, and cement sectors
- Threshold consistent with EU reporting

34

Major GSC Sectors Affected

(only if ≥ 25,000 metric tonnes/yr CO_2 from combustion)

- Natural gas transmission
- Industrial gases
- Paperboard manufacture
- Colleges and universities
- Oil production
- Food processing
- Steel foundries
- Mineral processes
- Glass container
- Malt beverages

35

How Will You Know If You Are a GSC Facility?

- ARB is working to ensure all ≥25,000 metric tonnes GSC facilities know of requirements
- Fuel usage can be used to quickly approximate CO_2 emissions
  - Appendix A provides fuel usage and emissions factors to estimate CO2 emissions

36

GSC Reporting Requirements

- Stationary combustion – choice of:
  - Calculate from fuel use and default emission factors (§95125(a)-(b))
  - Calculate using heat value or carbon content (§95125(c)-(d), (h))
  - Continuous monitoring if available (§95125(g))
- Oil and gas production sources test fuel
- Report indirect energy use in KWh, Btu
- Cogeneration as specified in §95112
- Electric generation as specified in §95111

37

Approximating Emissions Based on Amount of Fuel Used

Fuel Type	Fuel Units	Kg CO_2/Unit	Amount of fuel to produce 25,000 MT CO_2	Amount of fuel to produce 2,500 MT CO_2
Natural Gas[1]	SCF	0.05	459,140,464	45,914,046
LPG (energy use)	Gal	5.79	4,317,757	431,776
Distillate Fuel	Gal	10.14	2,466,011	246,601
Motor Gasoline	Gal	8.80	2,841,174	284,117
Landfill Gas	MMBtu	52.03	480,503	48,050
Coal[2]	Short Ton	2,082.89	12,003	1,200
Jet Fuel	Gal	9.56	2,614,682	261,468
Kerosene	Gal	9.75	2,562,972	256,297
Petroleum Coke	MMBtu	102.04	244,996	24,500
Crude Oil	Gal	10.29	2,430,348	243,035

[1]Unspecified
[2]Unspecified Other Industrial

38

GSC Reporting Deadlines

- Data reports for GSCs due each April 1, beginning in 2009 for 2008 emissions
- Verification required on triennial schedule, due October 1 beginning 2011 for 2010 reported data
  - Except oil and gas production -- annual verification begins in 2010 for 2009 reported emissions

39

Cessation of GSC Reporting

- Can cease reporting if for 3 consecutive years, CO_2 emissions drop below 20,000 MT ((§95103(e))
- Facility is subject again to reporting if it exceeds 25,000 MT CO_2 from stationary combustion

40

Comments on requirements for GSC facilities?

41

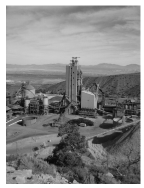
Cement Plants

(§95110)

42

Cement Plants: Who Would Report

- Operators of Cement Plants
- Primarily Manufacturing Cement
- Eleven Total in California
- Updated Definition
  - NAICS Code 327310



43

Cement Plants: Updated Definitions

- Calcination
  - Specified calcium oxide rather than clinker
- Cement
  - Eliminated reference to finish mixing
- Cementitious product
  - Added fly ash, slag, and other pozzolans

44

§95110. Data Requirements and Calculation Methods

a) Greenhouse Gas Emissions Data Report

b) Calculation of CO_2, N_2O, and CH_4 Emissions

c) Process CO_2 Emissions from Cement Manufacturing

d) Stationary Combustion CO_2 Emissions

e) Efficiency Metrics

45

§95110(a) Greenhouse Gas Emissions Data Report

1) Total Emissions (metric tonnes)
   - CO_2, CH_4, and N_2O
2) Process CO_2 Emissions
3) Stationary Combustion
4) Fugitive Emissions
5) Indirect Energy Usage
6) Efficiency Metrics

- Examples of Reported Information
  - Quantity of clinker produced (metric tonnes)
  - Fuel consumption by fuel type (scf, gallons, or tons)
  - Coal consumption by coal type (tons)

46

§95110(b) Calculation of CO_2, N_2O, and CH_4 Emissions

1) Total CO_2 Emissions – Proposed Approach
   A. Continuous Emissions Monitoring Systems (CEMS), **OR**
   B. Process and Stationary Combustion CO_2 Emissions
2) Direct N_2O and CH_4 Emissions
3) Direct Fugitive Emissions – Updated Emission Factors
4) Indirect Energy Usage
5) Cogeneration
6) Efficiency Metrics – Added second metric

47

§95110(c) Process CO_2 Emissions from Cement Manufacturing

1) Clinker-Based Methodology
   A. Clinker Emission Factor (EF_{Cli})
      - Measured annually
      - Excludes imported non-carbonate sources
   B. CKD Emission Factor (EF_{CKD})
      - No changes
2) Total Organic Carbon (TOC) Content in Raw Materials
   - Assumed 0.2% TOC in Raw Material

48

§95110(d) Stationary Combustion CO_2 Emissions

- Measured Carbon Content
  - Coal or Petroleum Coke
    - Monthly Measurement, Composite of Weekly Samples
- Measured Heat Value or Carbon Content
  - Other Fossil Fuels
  - Landfill Gas or Biogas
  - Alternative Fuels
- Default or Source Specific Emission Factors
  - Co-Firing Biomass and Fossil Fuels
  - Biomass or Municipal Solid Waste
- Default Emission Factors for Start-Up Fossil Fuels

49

§95110(e) Efficiency Metrics

Unchanged Method

1) CO_2 Emissions per metric tonne of Cementitious Product

Proposed Additional Metric

2) CO_2 Emissions per metric tonne of Clinker
   - Clinker consumed, added to stock, or sold

50

Review of Cement Plants

- Proposed Approach
  - Consistent with CCAR Cement Protocol
  - Clinker-Based Method is Good Practice
  - Plant-specific Emission Factors
  - Stationary Combustion Emissions Using Measured Data
  - Efficiency Metrics
  - Complete Inventory of Cement Plant Emissions

51

Cement Plant Reporting Deadlines

- Data reports due each June 1, beginning in 2009 for 2008 emissions
- Verification required on triennial schedule, due December 1 beginning 2010
  - Change in materials or operations that require permit change
  - Emissions data report shall be verified the following calendar year

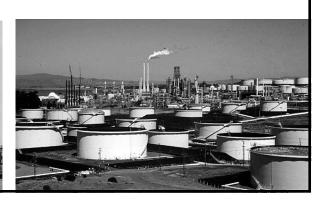
52

Comments on Cement Plant Proposals?

53

Petroleum Refining, Hydrogen Plants, Oil and Gas Production

(§95113, 95114, 95115(b))



Refining Sector Basics

- Annual reporting and verification on a facility basis
- Stationary combustion, process, fugitives
- Gases as specified in the regulation
  - CO_2, CH_4, N_2O
- Cogeneration; indirect energy use
- Report emissions by June 1
- Verification by December 1

55

Stationary Combustion – CO_2

- Refinery Fuel Gas
  - Calculate a fuel specific EF
    - Hourly average HHV, CC daily
    - Use EF and daily average HHV to calculate CO_2 emissions
- Natural Gas
  - Stationary combustion - CO_2 monthly using measured HHV and default EF when HHV range is 975-1100 Btu/scf

56

Asphalt Production

- August 10 draft method has been modified to recognize the fact that emissions are "controlled"
- Calculate CO_2 and CH_4 emissions
- Use default emission factor (2,555 scf $CH_4/10^6$ bbl)
- Assume destruction efficiency of 98%

57

Sulfur Recovery – CO_2

- Default molar fraction CO_2 to SRU = 20%
- Recognizing
  - There are numerous feeds to SRUs
  - Feed carbon content may vary significantly
  - Default value may not be applicable in all situations
- Option has been included to allow determination of specific carbon content value(s) using source test(s)
- Source test ARB approved and conducted under supervision of ARB or AQMD/APCD

58

Hydrogen Production Facilities

- Operational control determines whether hydrogen plants report as part of a refinery, or a stand-alone entity
- Report
  - Fuel and feedstock consumption, hydrogen production, transportation hydrogen sales
  - Stationary combustion and process emissions – CO_2, CH_4, N_2O
  - Fugitive emissions
  - Flaring emissions
  - Process vent emissions
  - Sulfur recovery emissions
  - Cogeneration emissions; indirect energy purchases

59

Hydrogen Plants - Combustion and Process Options

- CEMS – must be installed and operated as per 40 CFR Part 75
- Fuel and Feedstock Mass Balance – "S" Factor for emissions accounted for elsewhere
- Combustion and process calculated separately – "S" factor applicable

60

Hydrogen Plants – Transferred CO_2

- Transferred CO_2 – not directly emitted but sold and transferred out of the installation (e.g., food grade CO_2 for beverages)
- Transferred CO_2 to be reported but not subtracted from emissions report
  - This regulation defines accounting methodologies
  - This regulation does not define avoided or offset emissions

61

Exploration and Production Facilities

- Subject to reporting as a major source with emissions over the 25,000 metric ton threshold
  - Combustion sources only
  - Process, fugitives will be added later
- Associated gas
  - Regulatory proposal requires fuel-specific emission factor (like refineries)
  - Invite comment on alternative: Monthly measured HHV if 975<HHV>1100; monthly carbon content if outside range

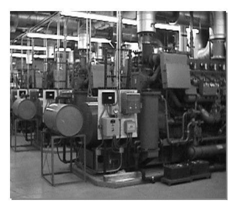
62

Comments on Refineries, Oil/Gas Production or Hydrogen Plants?

63

Cogeneration Facilities

(§95112)



64

Cogeneration Facilities: Who Would Report

- Operators of Cogeneration Facilities
- Nameplate Generating Capacity $\geq$1 MW
- Annual CO_2 Emissions $\geq$ 2,500 metric tonnes
- Updated Applicability
  - All facilities shall meet generating capacity and emissions threshold for reporting to be required

65

Cogeneration Facilities: Updated Definitions

- Cogeneration Facility
  - Industrial structure, installation, plant, building, or self-generating facility
  - Sequential generation of multiple forms of useful energy in a single, integrated system.
- Topping Cycle Plant
  - Energy input used to produce useful power output
  - Reject heat used to provide useful thermal energy
- Bottoming Cycle Plant
  - Energy input applied to useful thermal energy
  - Reject heat used for power production

66

§95112 Data Requirements and Calculation Methods

a) Greenhouse Gas Emissions Data Report
- Information to Submit Each Report Year
- Total Emissions for Each GHG
- Summary of Emissions by Source
- Data Used to Calculate Emissions

b) Calculation of CO_2, N_2O, and CH_4 Emissions
- Methods to Calculate Emissions

67

§95112(a) Greenhouse Gas Emissions Data Report

1) Facility Level and Generating Unit Information
2) Cogeneration System
3) Electricity Generation
4) Thermal Energy Production
5) Distributed Emissions
6) Indirect Electricity Usage

- Examples of Reported Information
  - Nameplate generating capacity (MW)
  - Prime mover
  - Electricity consumed on-site (kWh)
  - Useful thermal output (MMBtu)
  - Efficiency of electricity generation (percent)

68

§95112(b) Calculation of CO_2, N_2O, and CH_4 Emissions

1) CO_2 Emissions from Stationary Combustion
   – 95111 (c)
2) GHG Emissions from Processes and Fugitive Sources
   – 95111 (e) – (h)
3) N_2O and CH_4 Emissions from Stationary Combustion
   – 95125 (b)
4) Distributed Emissions
   – 95112 (b) (4)
      A. Topping Cycle Plants
      B. Bottoming Cycle Plants

69

§95112(b)(4) Distributed Emissions

- Topping Cycle Plants
  - Efficiency Method
  - Distributed between Thermal Energy and Electricity Generation
- Bottoming Cycle Plants
  - Detailed Efficiency Method
  - Distributed between Manufactured Products, Thermal Energy, and Electricity

70

§95112(b)(4) Distributed Emissions

- Proposed Approach
  - Relies on Registry Efficiency Method
  - Assumed Efficiency Values
  - Does not include Facility-Specific Thermal Energy Efficiency Equation
  - Option to Calculate Facility-Specific Electricity Generation Efficiency
  - Built-in Flexibility
  - Equitable Approach

71

Cogeneration Facilities Reporting Deadlines

- Data reports due each April 1, beginning in 2009 for 2008 emissions
- Verification required on annual schedule, due October 1 beginning 2010

72

Cessation of Cogeneration Facility Reporting

- Can cease reporting if for 3 consecutive years, CO_2 emissions drop below 2,000 MT ((§95103(e))
- Facility is subject again to reporting if it exceeds 2,500 MT CO_2 from stationary combustion

73

Comments on cogeneration facilities?

74

Verification

(§95130-95133)

- Requirements
- Accreditation
- Conflict of Interest

Why Verification?

- The Act requires it
- Expected under international standards
- Experience with voluntary reporting shows the need
- Complex nature of emissions estimation
- Critical for credibility of program

76

Who Verifies?

- Air districts and consulting firms become verification bodies
  - Subject to ARB training and oversight
- Operator selects verification body
- Verification body selects specialized verification team appropriate to facility type
  - Includes auditing and engineering skills

77

Verification

- Annual third-party verification for:
  - Refineries
  - Hydrogen plants
  - Oil and gas production facilities
  - Retail providers and Marketers
  - Power plants and cogeneration facilities ≥ 10 MW (except pure biomass)
- Triennial third-party verification for other sources

78

Third Party Verification

- Consistent with existing standards, including ISO
  - Already required for CCAR members
- Third party verifiers will help assure data quality
- Verifiers to be trained under ARB approved curriculum
  - Demonstrate expertise
  - Consistency in verification

79

Verification Services

- Verification Plan
- Site visits to identify sources and review data management systems
- Sampling Plan
  - Assess uncertainty risk of data management system, data acquisition equipment, emissions calculations
  - Ranking of most significant and uncertain sources
- Data checks focus on areas with high risk of uncertainty as determined in sampling plan

80

Verification Services

- Comparison of verifier data checks with reported data
- Overall differences exceeding 5 percent considered significant
- Verification products
  - Detailed report to facility
  - Verification opinion to both facility and ARB

81

Accreditation: Verification Bodies

- Only an accredited verification body may conduct verification and submit a verification opinion.
  - Two lead verifiers
  - At least five total staff
  - Professional liability insurance
  - May subcontract with other ARB-accredited verifiers to establish verification teams
- Air Districts welcome as verification bodies when specified qualifications are met -- may offer verification services for a service fee.

82

Accreditation: Lead Verifiers

- Lead verifier in good standing under CCAR or UKAS, or accredited in ISO 14065, ISO 14064, ISO 19011, and completed 3 verifications by 12/31/07; or,
- 2 yrs as ARB accredited verifier, completed 3 verifications as an apprentice lead, and had favorable assessment; or,
- Project manager or lead developing GHG or emissions related inventories for 4 yrs, 2 yrs may be graduate level work.
- All must take State approved verification training and pass an exit exam, additional ‘auditing’ training when specified.

83

Accreditation: Verifiers

- Bachelor’s level degree: science, technology, statistics, business, environmental policy, mathematics, financial auditing or economics
  - Or, work experience that provides technical skills to do verification
- 2 yrs in professional role in emissions management, technology, or other technical field with skills to conduct verification
- Must take part in ARB approved verification training and pass an exit exam

84

Conflict of Interest

- Term Limit
  - Verifiers to be changed after 6 years of verification services (two cycles)
  - Allowed to resume with client after 3 years off (one cycle)
- Conflict of Interest Policy
  - Verification body and verifier may not provide both consulting and verification services within a 3-year period.

85

Pre-verification Process

- ARB will approve verification teams before verification activities take place.
- Teams must demonstrate acceptable level of conflict-of-interest and expertise for verifying the type of facility they contract with.
- Team must include a specialist for retail provider, marketer, petroleum refinery, hydrogen plant, cement plant.

86

Verification Oversight

- ARB staff responsible for enforcing regulation
- Verification process will assist compliance efforts
- Targeted review of submitted data and verifiers

87

Verification Comments?

88

Electric Generating Facilities, Retail Providers, and Marketers

(§95111)

89

Who Would Report

- Operators of Electric Generating Facilities $\geq$ 1 MW and $\geq$ 2,500 MT of CO2 per year
  - Fossil Fuels, Landfill Gas, Biogas, Biomass, Municipal Solid Waste, Geothermal
- Retail Providers
  - IOUs, POUs, ESPs, CCAs, multi-jurisdictional utilities, WAPA, DWR
- Marketers

90

Reporting Schedules

- April 1 – generating facilities
  - Unless operated by retail provider
- June 1 -- Retail providers and marketers
  - Including generating facilities operated by retail providers

91

Verification Schedules

- Annually 6 months following reporting due date
- Exception -- Triennially beginning with 2010 report (2009 data) for
  - Pure biomass (97%)
  - Generating facilities < 10 MW

92

Generating Facilities Would Report

- Nameplate Generating Capacity (MW)
- Annual Net Power Generation (MWh)
- Annual Fuel Consumption by Fuel Type
- Annual CO_2, N_2O, CH_4 from Fuel Combustion
- CO_2 from Acid Gas Scrubbers
- CH_4 from Coal Storage
- HFCs from Cooling that supports power generation
- CO_2 from Geothermal
- Wholesale Sales Exported Out-of-State (MWh) when known
- ***Heat and Carbon Content when measured***
- ***SF6 from equipment located at facility***

93

Generating Units Would Report

- Nameplate Generating Capacity (MW)
- Annual Net Power Generation (MWh)
- Annual Fuel Consumption by Fuel Type
- Annual CO_2, N_2O, CH_4 from Fuel Combustion
- ***Wholesale Sales Exported Out-of-State (MWh) when known, if applicable***

94

Optional Reporting

- Aggregation of Multiple Units
- Operators of Out-of-State Facilities
- Asset Owning/Asset Controlling Suppliers

95

Retail Providers and Marketers

- Fugitive SF_6 from Transmission and Distribution facilities
- Power Imported (MWh)
- Power Exported (MWh)
- Power Wheeled Through California (MWh)
- Null Power

96

Retail Providers -- Additional

- Facility level and generating unit Information
- Net generation for nuclear, hydro, wind, or solar generating facilities they operate
- Retail sales
  - Multi-jurisdictional report ratio
  - Green retail sales (optional)
  - Retail sales for electrification projects (optional)
- Power purchased or taken from in-state specified and unspecified sources (MWh)
- Wholesale sales from power purchased or taken from specified and unspecified sources and sold to in-state entities

97

Retail Providers -- Additional

- Native load designations (Optional)
- For nuclear or hydro > 30 MW
  - Power purchased with contract prior to January 1, 2008
  - Power purchased without such contract
- Ownership shares in generating facilities

98

Retail Providers -- Additional

For facilities with CO2 emissions > 1,100 lbs/MWh

- Ownership share differential (OSD)
  OSD = 0.9 * (Ownership share) * (net generation) – power taken
- Adjusted ownership share differential (AOSD)
  - Wholesale sales met criteria
    - Power could not be delivered
    - Power was not needed
  - Reduced demand resulted in reduced generation

99

Methodologies CO_2 from Fuel Combustion

- Natural Gas
  - 40 CFR Part 75 emissions
  - Monthly heat content or monthly carbon content or CEMS for others
- Coal and Petroleum Coke
  - 40 CFR Part 75 emissions (including Appendix G)
  - Monthly carbon content or CEMS for others
- Middle Distillates, Residual Oil, LPG
  - 40 CFR Part 75 emissions
  - Per delivery/monthly heat content or monthly carbon content or CEMS for others

100

Methodologies CO_2 from Fuel Combustion

- Landfill gas or biogas
  - ***Monthly*** heat content, monthly carbon content or CEMS
- Biomass or MSW
  - If available, CO_2 CEMS and flue gas flow meter
  - Default emission factor method
  - ***ARB approved source-specific emission factors***
- Geothermal
  - Default emission factor method (note errata)
  - ***ARB approved source-specific emission factors***
- Start-Up fuels for biomass facilities
  - Default emission factor

101

Other Methods

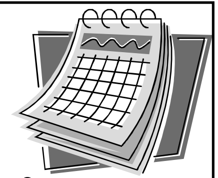
- N_2O & CH_4 from Fuel Combustion
  - Default emission factors or
  - ***ARB source-specific emission factors***
- ASTM D6866 to determine biomass-derived portion of MSW
- Fugitive SF_6 and HFCs
  - Mass Balance
  - ***HFC service logs for individual units***

102

Questions on Electric Power Sector Reporting Requirements?

103

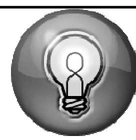
Next Steps



- Collect comments on proposal
- Board Hearing December 6
  - Receive public testimony
  - Consider staff proposal
- Board Hearing in El Monte (Southern California)

104

Submitting Comments



- Submit formal comments on proposal at:
  http:/www.arb.ca/gov/lispub/comm/bclist.php
  - Includes mechanism for providing attachments
- Comments required by December 5, 2007, 12:00 Noon unless provided at Board meeting (recommend earlier submittal, please)
- Staff Report and Regulation: http://www.arb.ca.gov/regact/2007/GHG2007/GHG2007.htm

105

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GHG Mandatory Reporting Website
http://www.arb.ca.gov/cc/ccei/ccei.htm

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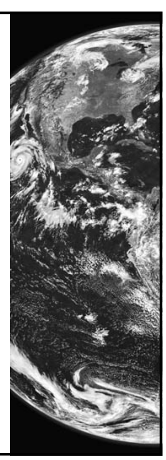

Thank you for attending.

108